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Andreas Weigl

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EXAMINER

DALEY, CHRISTOPHER ANTHONY

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|---|-------------------------------------|--|
| Office Action Summary | Application No. 10/560,959 | Applicant(s) WEIGL ET AL. | |
| | Examiner CHRISTOPHER A. DALEY | Art Unit 2111 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17, 19-23 and 25-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 17, 19-23 and 25-32 is/are rejected.
- 7) ☐ Claim(s) 33-35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 17, 19-23, 25-35 are pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 17, 19 – 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuehrer et al (US20040228366) hereinafter Fuehrer in view of Rahul Shah & Xuanming Dong, (An Introduction to TTCAN) hereinafter Shah in further view of Sato (US6128318).

3. As to claim 17, Fuehrer discloses a method for exchanging messages containing data between at least two stations over a bus system, comprising: (Figure 1 illustrates a system with two stations, namely 101 and 102, connected via a bus 100, page 1, paragraph 0025);

Fuehrer does not explicitly disclose repeatedly transmitting over the bus system, by a first station, a reference message containing time information of the first station at least one specifiable time interval, the time interval being subdivided as a basic cycle into time windows, a pause period of variable duration being provided at an end of at least one basic cycle.

However, Shah teaches repeatedly transmitting over the bus system, by a first station, a reference message containing time information of the first station at least one specifiable time interval, the time interval being subdivided as a basic cycle into time windows, a pause period of variable duration being provided at an end of at least one basic cycle (Page 9 illustrates the message frame for a plurality of packets for transmission. Within each message frame, at the start of the frame is some pause time, represented by the bus idle segment); transmitting messages containing data in at least some of the time windows (Page 31 illustrates data such as message A , Msg. C, message D during the basic cycle); and adapting the duration of the pause period to change a time of a start of a next basic cycle (Page 9 illustrates the message frame for a plurality of packets for transmission. Within each message frame, at the start of the frame is some pause time, represented by the bus idle segment. This bus idle time slice is variable). It would have been obvious for one of ordinary skill in the art at the time of the invention to use the TTCAN protocol of Shah in the system of Fuehrer as a TTCAN protocol was called for, page 1, paragraph 0008. One of ordinary skill in the art would have been motivated to use the protocol of Shah in Fuehrer as a TTCAN protocol was called for, page 1, paragraph 0008.

Fuehrer discloses the method wherein the time of the start of the basic cycle is corrected by shortening the duration of at least one pause period (Figures 2a-c illustrates the framing of the communication stream that comprises two variable, dynamic segments, such as 231 and 241. These pause period are used to provide

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variability in the communication frame. Said segments comprise a pause period as it is after the end of data frame, COL. 3, paragraph 0028.

Fuehrer is modified by Shah does not explicitly disclose adapting the duration of the pause period determining a correction value based on a local time of a station and a cycle time, the correction value being used in adapting the duration of the pause period; and compensating for a time deviation by correcting a time of a start of the basic cycle, and correcting the time by adapting the duration of the pause period; wherein the time of the start of the basic cycle is corrected by one of lengthening and shortening the duration of at least one pause period.

However, Sato teaches of a synchronization scheme between a master node and a slave node. The master node comprises a timer adjustment register, and the slave comprises a time offset register that defines the pause period, and the adjustment logic. A timer off set value , i.e. the correction value is determined based on the local master/slave interaction, and then adjusting the master pause period, COL. 2, lines 1 - 64.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the synchronizing scheme of Sato in the system of Fuehrer/Shah to provide fault tolerant process synchronization, COL. 1, lines 44 - 63. One of ordinary skill in the art would have been motivated to use the synchronizing scheme of Sato in the system of Fuehrer/Shah to provide a fault tolerant process synchronization, COL. 1, lines 44 - 63.

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4. As to claim 19, Shah discloses the method, wherein at least two bus systems are synchronized with one another; a time of a start of a basic cycle of a first bus system is corrected by adaptation of the duration of the pause period of a second bus system.

5. As to claim 20, Shah discloses the method, wherein a pause period is provided at an end of every basic cycle (Page 31 illustrates a scheme where the end of the basic cycle is Msg. C, where a pause could be substituted, see page 30 on variation in message composition).

6. As to claim 21, Shah discloses the method, wherein a pause period is provided at an end of every $2n$ th basic cycle, where n corresponds to a natural number (Page 31 illustrates a scheme where the end of the basic cycle is Msg. C, where a pause could be substituted for every $2n$ th basic cycle, see page 30 on variation in message composition).

7. As to claim 22, Shah discloses the method, wherein a pause period is provided at an end of every $2n+1$ th basic cycle, where n corresponds to a natural number (Page 31 illustrates the similar ending, and page 30 allows for said variation).

8. As to claim 23, Shah discloses the method, wherein, when data is exchanged, a pause period of variable duration is provided at an end of each of at least two basic cycles, by which a change of a start of a beginning of at least one basic cycle 'is corrected by adaptation of the duration of the at least two pause periods (Page 31

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illustrates a plurality of basic cycles, and the teaching of page 30 allows for combining different time slots to support said limitation).

9. As to claim 25, Shah discloses the method, wherein the correction value is determined from a first difference between two local times of the station in two successive basic cycles (Drift compensation of page 27 illustrates said limitation).

10. As to claim 26, Shah discloses The method, wherein the correction value is determined from a second difference between two cycle times of two successive basic cycles (Page 27 illustrates difference calculation).

11. As to claim 26, Shah discloses the method, wherein the correction value is determined from a comparison value formed by a sum of the time interval of the basic cycle and the second difference (Page 27 illustrates said summing).

12. As to claim 28, Shah discloses the method, wherein the correction value corresponds to the difference between the first difference and the comparison value (Page 27 illustrates said comparison).

13. As to claim 29, Shah discloses the method, wherein at least two pause periods are provided in at least two basic cycles for exchanging data, and the correction value is distributed over the at least two pause periods in a specifiable manner (Page 31

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illustrates the plurality of basic cycles which allows for said configuration in pause from the attribute of page 30).

14. As to claim 30, Shah discloses the method, wherein the correction value is evenly distributed over the at least two pause periods (Page 30 allows for said distribution).

15. As to claims 31 and 32, Fuehrer discloses a device and a system for exchanging data in messages between at least two stations connected by a bus system, comprising:

a first arrangement at a first station configured to repeatedly transmit a reference message containing time information of the first station over the bus system at least one specifiable time interval (Figure 1 illustrates a system with two stations, namely 101 and 102, connected via a bus 100, page 1, paragraph 0025. This is a time controlled bus system that controls transaction between said stations, page 1, paragraph 0010);

Fuehrer does not explicitly disclose a second arrangement configured to subdivide the time interval as a basic cycle into time windows of specifiable length, the messages being transmitted in the time windows; and a third arrangement configured to provide a pause period of variable duration at an end of at least one basic cycle when data is exchanged, a start of a beginning of the basic cycle being corrected by adaptation of the duration of the pause period.

However Shah teaches a second arrangement configured to subdivide the time interval as a basic cycle into time windows of specifiable length, the messages being transmitted in the time windows (Page 9 illustrates the message frame for a plurality of packets for transmission. Within each message frame, at the start of the frame is some pause time, represented by the bus idle segment); transmitting messages containing data in at least some of the time windows (Page 31 illustrates data such as message A, Msg. C, message D during the basic cycle); and a third arrangement configured to provide a pause period of variable duration at an end of at least one basic cycle when data is exchanged, a start of a beginning of the basic cycle being corrected by adaptation of the duration of the pause period (Page 9 illustrates the message frame for a plurality of packets for transmission. Within each message frame, at the start of the frame is some pause time, represented by the bus idle segment. This bus idle time slice is variable). It would have been obvious for one of ordinary skill in the art at the time of the invention to use the TTCAN protocol of Shah in the system of Fuehrer as a TTCAN protocol was called for, page 1, paragraph 0008. One of ordinary skill in the art would have been motivated to use the protocol of Shah in Fuehrer as a TTCAN protocol was called for, page 1, paragraph 0008. Fuehrer discloses wherein the time of the start of the basic cycle is corrected by shortening the duration of at least one pause period (Figures 2a-c illustrates the framing of the communication stream that comprises two variable, dynamic segments, such as 231 and 241. Said segments comprise a pause period as it is after the end of data frame, COL. 3, paragraph 0028.

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Fuehrer is modified by Shah does not explicitly disclose adapting the duration of the pause period determining a correction value based on a local time of a station and a cycle time, the correction value being used in adapting the duration of the pause period; and compensating for a time deviation by correcting a time of a start of the basic cycle, and correcting the time by adapting the duration of the pause period; wherein the time of the start of the basic cycle is corrected by one of lengthening and shortening the duration of at least one pause period.

However, Sato teaches of a synchronization scheme between a master node and a slave node. The master node comprises a timer adjustment register, and the slave comprises a time offset register that defines the pause period, and the adjustment logic. A timer off set value , i.e. the correction value is determined based on the local master/slave interaction, and then adjusting the master pause period, COL. 2, lines 1 - 64.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the synchronizing scheme of Sato in the system of Fuehrer/Shah to provide fault tolerant process synchronization, COL. 1, lines 44 - 63. One of ordinary skill in the art would have been motivated to use the synchronizing scheme of Sato in the system of Fuehrer/Shah to provide fault tolerant process synchronization, COL. 1, lines 44 - 63.

Allowable Subject Matter

16. Claims 33 – 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

17. Applicant's arguments with respect to claims 17, 31, and 32 have been considered but are moot in view of the new ground(s) of rejection. The Applicant has argued that "While the rejections may not be agreed with, to facilitate matters, claim 17 has been rewritten to better clarify the claimed subject matter. Claim 17 now includes the features of claim 24, which has been canceled without prejudice. In particular, claim 17, as presented, is to method for exchanging messages containing data between at least two stations over a bus system, including: repeatedly transmitting over the bus system, by a first station, a reference message containing time information of the first station at least one specifiable time interval, the time interval being subdivided as a basic cycle into time windows, a pause period of variable duration being provided at an end of at least one basic cycle; transmitting messages containing data in at least some of the time windows; adapting the duration of the pause period; determining a correction value based on a local time of a station and a cycle time, the correction value being used in adapting the duration of the pause period; and compensating for a time deviation by correcting a time of a start of the basic cycle, and correcting the time by adapting the duration of the pause period;

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in which the time of the start of the basic cycle is corrected by one of lengthening and shortening the duration of at least one pause period.”

In response, the Examiner points to the teaching of Sato.

Sato teaches of a synchronization scheme between a master node and a slave node. The master node comprises a timer adjustment register, and the slave comprises a time offset register that defines the pause period, and the adjustment logic. A timer off set value , i.e. the correction value is determined based on the local master/slave interaction, and then adjusting the master pause period, COL. 2, lines 1 -64. Therefore, the examiner cannot allow the claim, since the prior art discloses the element.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER A. DALEY whose telephone number is (571)272-3625. The examiner can normally be reached on 9 am. - 4p m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Mark Rinehart can be reached on 571 272 3632. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher A Daley/
Examiner, Art Unit 2111

/MARK RINEHART/
Supervisory Patent Examiner, Art Unit 2111